

## METHODS AND SYSTEM FOR POWER GENERATION

### ABSTRACT OF THE DISCLOSURE

A method of operating a power generation system and a power generation system are provided. The method includes coupling at least one electrical generator to at least one prime mover, wherein the at least one generator includes at least one of a stator and a rotor wherein at least one of the stator and the rotor includes superconducting windings therein, and coupling at least one cryogenic refrigeration system to the superconducting windings, wherein the at least one cryogenic refrigeration system is coupled in flow communication with the superconducting windings to facilitate reducing an operating temperature of the superconducting windings. The system includes at least one prime mover, at least one electrical generator rotatably coupled to the at least one prime mover, wherein the generator includes at least one of a stator and a rotor wherein at least one of the stator and the rotor includes a plurality of superconducting windings therein, and at least one cryogenic refrigeration system in flow communication with the superconducting windings.